

Claims

- [c1] A method for optical inspection, comprising:
 - generating an annular light beam;
 - scanning the annular beam along a line in a given scanning direction to provide a scanned single beam; and
 - splitting the scanned single beam to provide multiple beams of substantially identical intensity from the scanned single beam; and
 - detecting signals generated from an interaction between the plurality of multiple beams and an inspected object.
- [c2] An optical inspection method, comprising:
 - outputting an annular beam from a light source;
 - focusing the annular beam at a target; and
 - detecting light scattered from the target.
- [c3] The optical inspection method as set forth in claim 2, further comprising:
 - outputting a circular beam from the light source;
 - focusing the circular beam at the target; and
 - detecting light reflected from the target.
- [c4] The optical inspection method as set forth in claim 3, further comprising:

selecting an imaging operation type;
producing a selected one of the annular beam and the circular beam in based on the imaging operation type.

- [c5] The optical inspection method as set forth in claim 4, wherein, when the imaging operation type is bright field imaging, the light source is controlled to produce the circular beam, and, when the image operation type is dark field imaging, the light source is controlled to produce the annular beam.
- [c6] The optical inspection method as set forth in claim 2, further comprising:
scanning the annular beam along a line in a given scanning direction to provide a scanned single annular beam; and
producing multiple annular beams of substantially identical intensity from the scanned single annular beam.
- [c7] An optical inspection method, comprising:
outputting a single beam;
scanning the single beam along a line in a given scanning direction to provide a scanned single beam; and
producing multiple beams of substantially identical intensity from the scanned single beam.
- [c8] The optical inspection method as set forth in claim 7,

wherein the producing of the multiple beams is performed with a diffractive optical element having uniform diffraction efficiency.

- [c9] An optical inspection method, comprising:
 - outputting a beam; and
 - scanning the beam in a beam spot across a target, the target being movable in a target movement direction; wherein the beam has a scanning direction not perpendicular to the target movement direction.
- [c10] The optical inspection method as set forth in claim 9, wherein the beam spot travels a distance in the mechanical scanning direction that is greater than the distance in between scan lines in the mechanical scanning direction.
- [c11] An optical inspection method, comprising:
 - outputting a beam;
 - focusing the beam at a target; and
 - directing captured light to a detector through a confocal optical arrangement.
- [c12] The optical inspection method as set forth in claim 11, further comprising controlling the focus of the optics based on:
 - a light level threshold, and

a light level signal indicative of light received by the detector through the confocal optical arrangement.

- [c13] An optical inspection method, comprising:
 - providing a beam of light;
 - providing scanned multiple beams from the beam of light;
 - illuminating a target, with the scanned multiple beams, through an objective lens;
 - collecting light, returned back from the illuminated target, with the objective lens;
 - passing the collected light through to an imaging lens;
 - focusing the light of the imaging lens to a bright field channel detector.
- [c14] An optical inspection method, comprising:
 - providing a beam of light;
 - passing the beam of light through a first beam splitter;
 - scanning the light received through a first beam splitter to provide scanned light;
 - passing the scanned light through a scan lens and a second beam splitter, and illuminating a target through an objective lens;
 - collecting light returned back from the illuminated target;
 - passing the collected light to the second beam splitter;
 - providing part of the collected light, as a returned light

signal, back through the scan lens and scanner to the first beam splitter; deflecting the returned light signal, with the first beam splitter, through a focusing lens and a pinhole; and receiving the light through the pinhole using one or more detectors.

- [c15] The optical inspection method as set forth in claim 14, wherein:
 - the target is movable in a target movement direction;
 - and
 - the scanner scans with a scanning direction not perpendicular to the target movement direction.